

VTF 2006

VIA Technology Forum

VIA UMPC Platform Vision

Epan Wu

Deputy Director, x86 system Platform

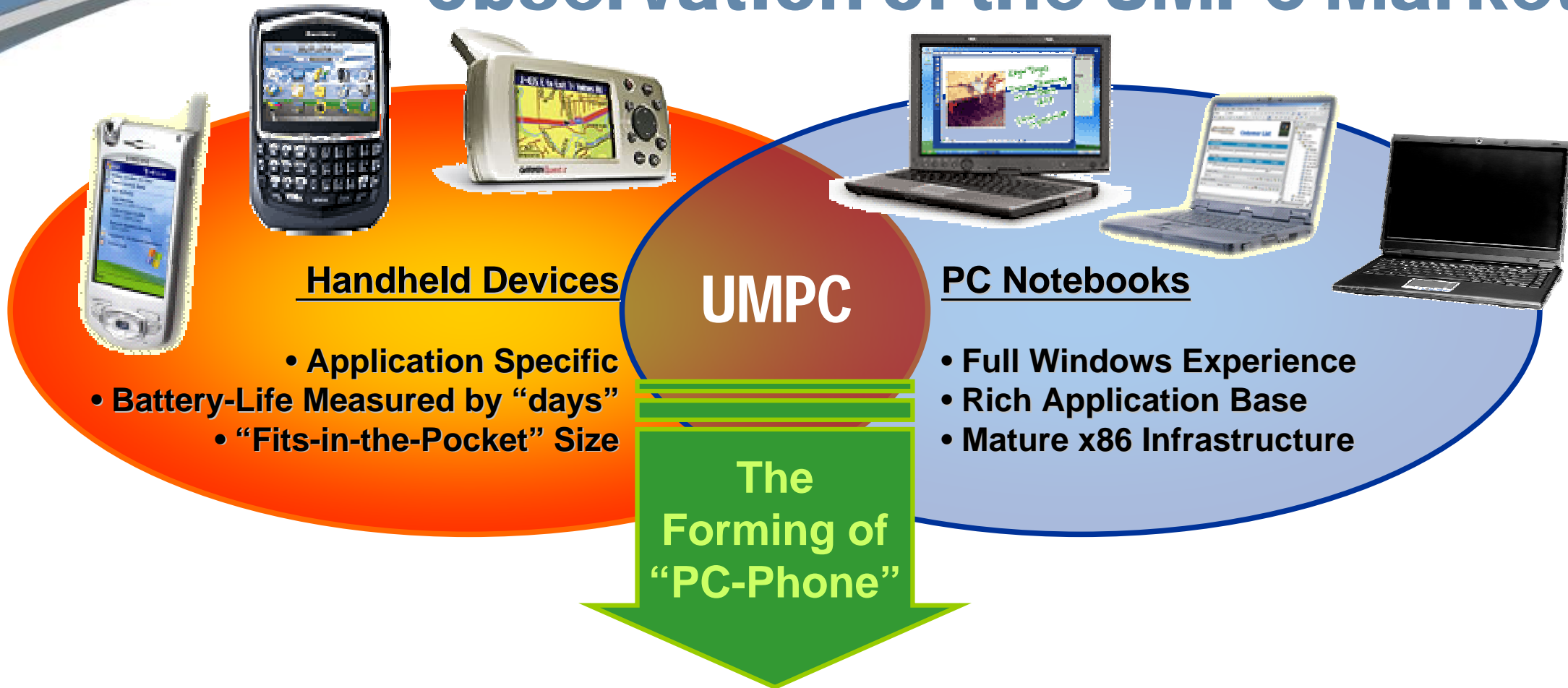
VIA Technologies, Inc.



Agenda

- **VIA**
 - Observation of the UMPC Market
 - Pioneering Partners
- **Driving the Growth**
 - Battery life
 - Size and Weight
 - Connectivity
- **What's New in the VIA Mobile Roadmap**
 - Processor (Demo)
 - X86 in the palm of your hands
- **Call to Action**

Observation of the UMPC Market



Pioneering Partners

**Smart
Caddie**



...fun to use, so much so it's addictive, easy to grab and go, small Size and light weight are an advantage that allows you to take it anywhere without being weighed down..... Bottom line is that we loved it.

TabletPc2.com

The Place for Tablet PC Comparisons, News, Reviews and Information



PaceBlade
technology



“We were also amazed by the versatility of the UMPC. Having the full Windows Tablet PC operating system combined with pen, touch and handheld controls in a single piece of equipment makes UMPC a very versatile piece of equipment. We found ourselves using it in places we don't normally take a Tablet PC with us. “

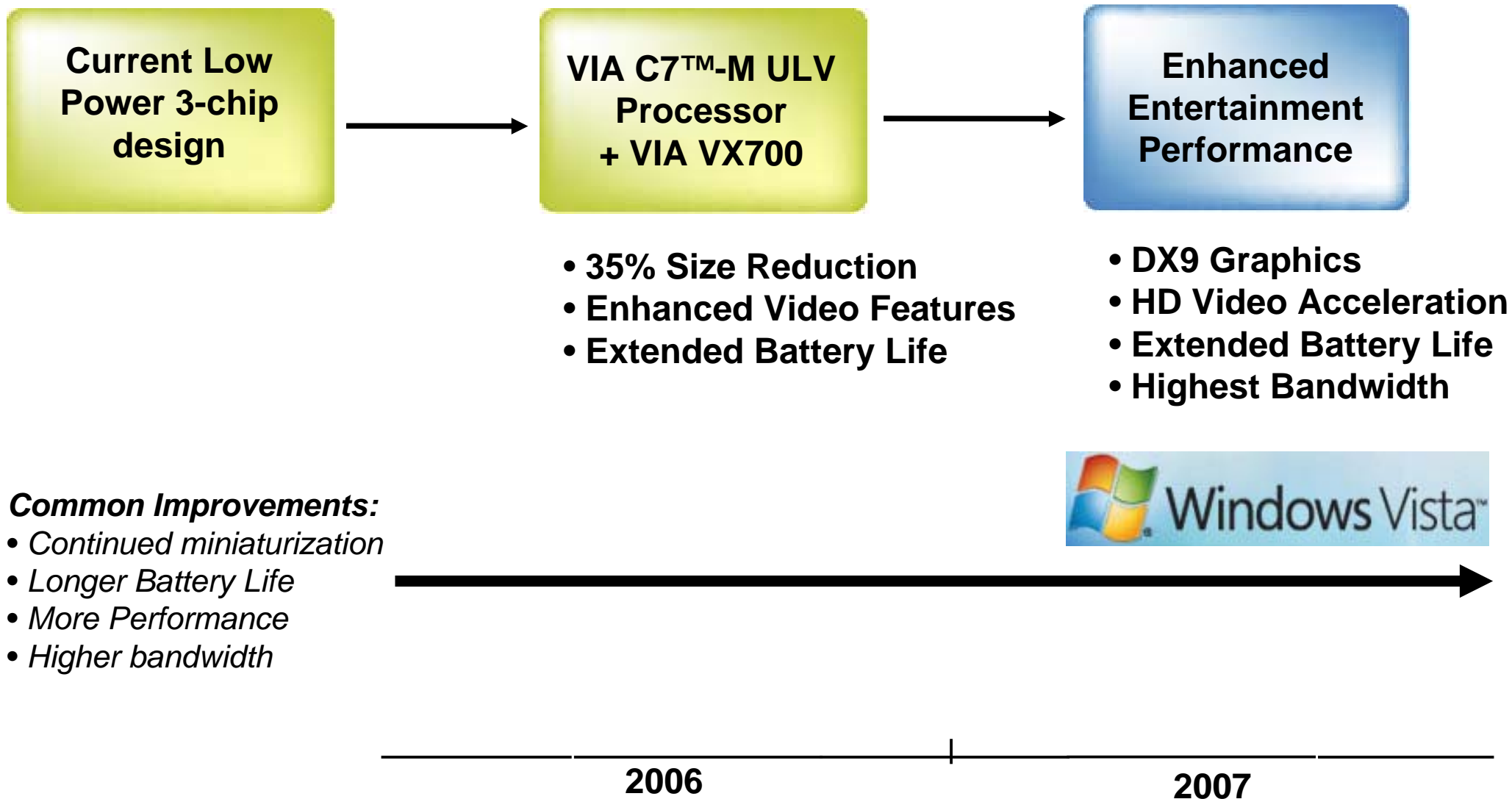
“UMPC Reviews”

<http://umpcreviews.info/>

“...Although hardware designs will vary by manufacturer, UMPCs will all feature small, lightweight designs that are optimized for mobility and ease of input.UMPC devices will have a battery life of two and a half hours or more, and feature 30-60 GB hard drive for storage, with VIA C7-M processors...”

“Q&A: Microsoft Unveils Details for Ultra-Mobile Personal Computers”

VIA UMPC Platform Roadmap



How VIA Provides a Better Ultramobility User Experience?

Longer Battery Life

Lowest TDP Power x86 Platform

Up to 50% lower than other solution

Sleeker Designs

Smallest Footprint x86 Platform

up to 50% PCB size reduction

Seamless Multimedia Experience

High Multimedia Integration

Smooth multimedia experience running cool and quiet devices

Highest Efficiency

Making the Best of “Always-Connected”

Offering the Highest PPW

Battery Life

-- The Never-Ending Quest for Mobile

- **Optimizing the Process Technology**

- **Optimizing the BIOS configuration**

VIA offers flexible BIOS configuration for handheld user-scenarios

- **Innovation from Display Partners**

- Wide screen in 5", 7"

- CCFL → LED back-light

- High Resolution 1024x600

- AUO, CPT, Samsung, Toppoly, Toshiba, etc.

Size and Weight -- From "Laptop" to "Palmtop"

- High-level integration allows smaller board design without sacrificing features and performance
- Low Power also helps on low profile thermal designs
- New battery technologies
- Potential with Static Storage

**Over 50% Silicon
real estate Savings**

Solution Provider	VIA	Intel
Platform Solution	C7TM-M ULV +VX700	Celeron® M ULV+915GM+ICH6-M
CPU Size	21x21 mm ²	35x35 mm ²
NorthBridge Size	35x35 mm ²	40x37.5 mm ²
South Bridge Size	--	31x31 mm ²
Total Silicon Real Estate	1666 mm²	3686 mm²

Connectivity, Beyond Wi-Fi

- **Ubiquitous Connectivity**
 - Wi-Fi
 - WiMAX
 - Notebook with SIM cards
 - CDMA



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- Demo -

Upcoming Mobile Technologies for the VIA C7-M

CJ Hothaus
Director, CPU System Engineering
VIA Technologies, Inc.



New Innovations in Power Efficiency

- VIA's C7 processor family already leads in power efficiency
 - Lowest max power allows fanless operation
 - Lowest average power maximizes battery life
- How does the design team get even better power efficiency?

Adaptive PowerSaver™

**Allows VIA C7-M Processors to maximize efficiency by
ADAPTING to the system environment**

What are Performance States?

- **CPU Performance States (P-States) allow the operating system to reduce voltage and frequency**
 - Reduces power consumption when the user doesn't need maximum performance
 - P-State tables in the BIOS contain pairs of voltage and frequency multipliers
 - Manufacturers select P-State ratios based on worst-case operating environments
- **Some low-end Mobile CPUs do not support P-States (example – Intel Celeron® M)**

What is Adaptive PowerSaver™ Technology?

- **Adaptive Control of P-States**
 - Highly-accurate, fast temperature sensors measure actual conditions
 - Adapt CPU parameters to changes in temperature
 - Operating system is still in control
 - CPU delivers requested P-State faster with lower power consumption
 - Transparent to user
- **VIA Leadership in Power Efficiency**

Adaptive PowerSaver™ Technology

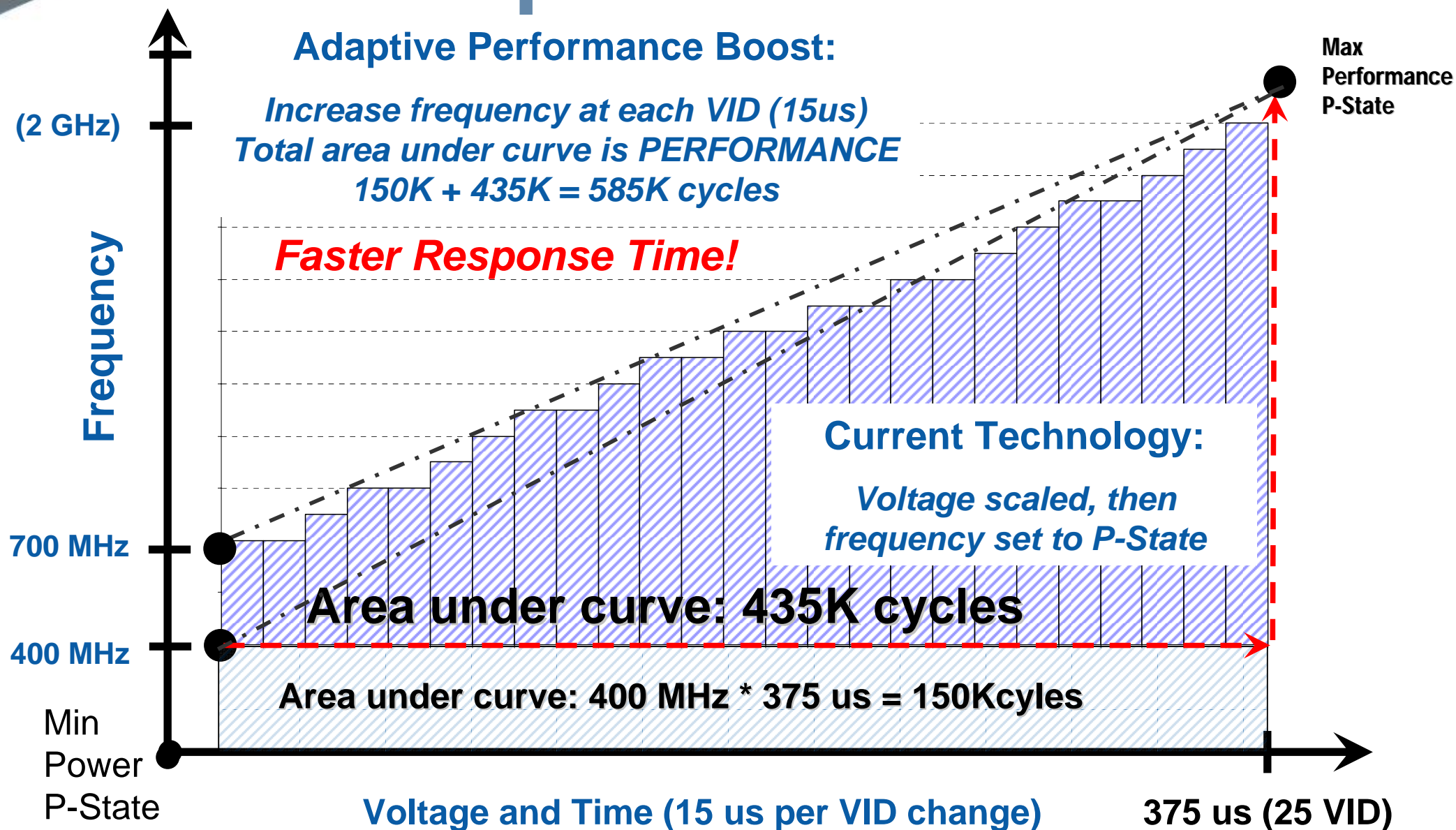
- **Multiple Adaptive Features**
 - Adaptive P-State Table
 - Adaptive P-State Control
 - Adaptive Performance Boost
 - Adaptive Thermal Monitor
- **Benefits**
 - More control to optimize thermal environment
 - Lower power consumption
 - Faster response time

Adaptive Performance Boost

Adaptive Performance Boost:

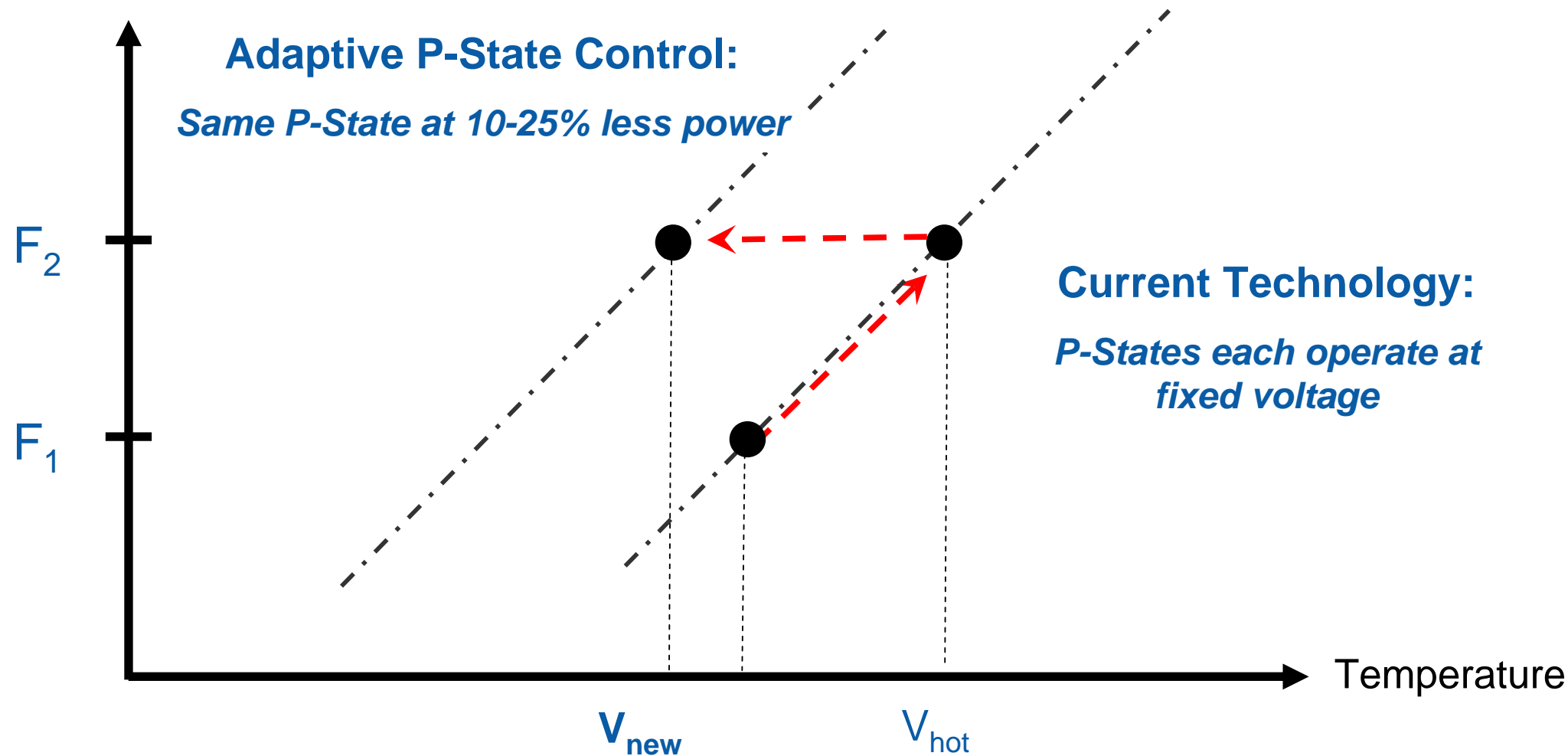
Increase frequency at each VID (15us)
Total area under curve is PERFORMANCE
 $150K + 435K = 585K \text{ cycles}$

Faster Response Time!



Adaptive P-State Control

Frequency



Adaptive Thermal Limit

- **Current Technology**
 - Thermal limit set to worst-case by CPU vendor
- **Adaptive Thermal Limit**
 - Programmable thermal limit may be set lower
 - Allows system vendor to adapt to thermal environment
 - Reduce fan power consumption
 - Reduce battery heat to extend life

Adaptive Thermal Monitor

- **Current Technology**

- “TM2” drops to lowest-power P-State when CPU hits thermal trip point (clock throttling)

- **Adaptive Thermal Monitor**

- Clock throttling adapts to thermal environment
- Reduces frequency only enough to drop temperature below thermal trip point
- Allows vendor to adapt to system environment and improve average performance

"System-In-Package"

-- x86 In The Palm Of Your Hands

- **Palm-Size Form Factor**

- Complete x86 System in 35x35mm² size
- Up to 30% board real estate savings
- Low Profile

- **Long Battery Life**

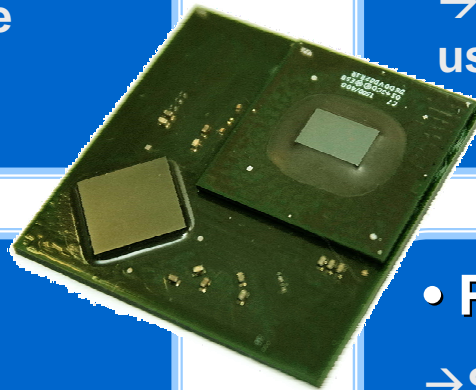
- Supports Enhanced PowerSaver™ Power Management
- Configurable for hand-held usage scenarios

- **Fast Bring-up**

- Drivers customized for F phone display available Now
- Leveraging proven and Mature technology

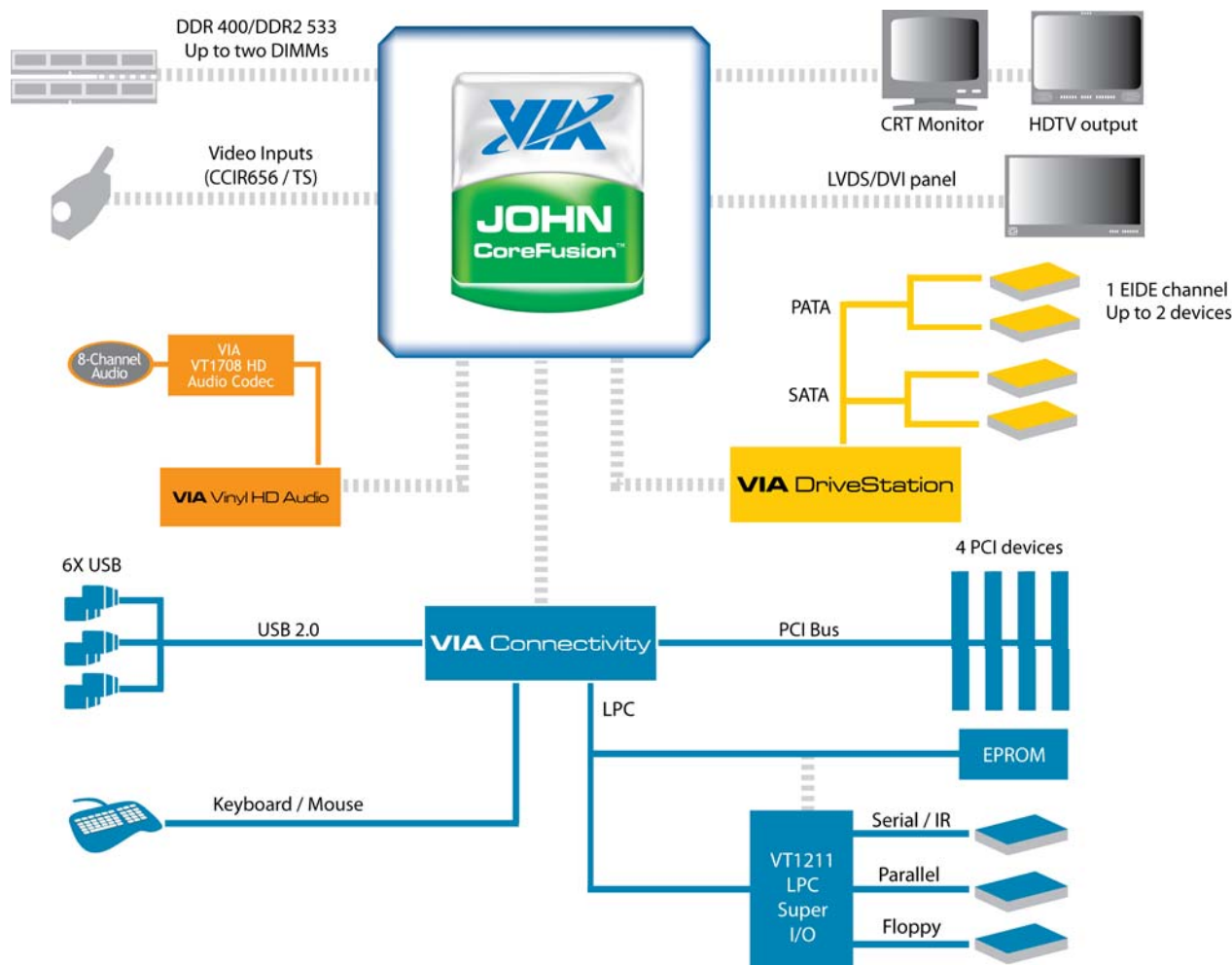
- **Protection and Privacy**

- Supports Execution Protection (NX) on Microsoft® Windows
- Integrated VIA Padlock™ security engine to secure personal data confidentiality



"John" Block Diagram

- Processor Speed up to 1.5GHz
- DDR400/DDR2 533, up to two DIMMs
- VIA UniChrome Pro II GFX
- MPEG2/MPEG4 video accelerator
- WMV9 video decoding accelerator
- Capture port/TS port
- Integrated HDTV encoder
- Digital panel I/F, LVDS/DVI
- 6 USB2.0 ports
- Two SATA ports
- ATA133, up to 2 devices
- HD audio
- PCI 2.3, up to 4 devices
- LPC bus, SMBus
- Extensive power management
- 35 x 35 mm, BGA



Call To Action

- **Optimize for best battery life with power management and BIOS optimization tools from VIA**
- **Optimize hardware and applications for UMPC or hand-held user behavior**
- **Make the Ultramobile PC a Device for all!**

Thank You!